

C21

(12) UK Patent Application (19) GB (11) 2 186 227 (13) A

(43) Application published 12 Aug 1987

(21) Application No 8531559

(22) Date of filing 21 Dec 1985

(71) Applicant  
Helix Limited

(Incorporated in United Kingdom)

Engine Lane, Lye, Stourbridge, West Midlands DY9 7AJ

(72) Inventor  
Andrew Charles Peters

(74) Agent and/or Address for Service  
H. N. & W. S. Skerrett,  
Rutland House, 148 Edmund Street, Birmingham B3 2LO

(51) INT CL<sup>4</sup>  
B26D 7/27 B25C 5/00 7/00

(52) Domestic classification (Edition I):  
B4C 106 A2 C4 C6  
B4B 11A2 16D 16H2

(56) Documents cited  
GB A 2095155 GB 1492217 GB 0413740  
GB A 2015410 GB 1426037 WO A1 86/01449

(58) Field of search  
B4C  
B4B  
Selected US specifications from IPC sub-classes B26D  
B25C

(54) Stapler

(57) A combined stapler and punch comprises a first section 2 and a base 3 pivotally mounting the section 2 wherein a first movement of the section 2 towards the base 3 operates the punch and further movement towards the base 3 operates the stapler. The section 2 includes a cover 2a, a channel 2d receiving a magazine 2e of staples, a stapler driver 2g fixed to the cover 2a and a safety block S/S2 on the cover 2a. The block S/S2 is movable rearwardly to lie between the underside of the cover 2a and the magazine 2e thereby preventing the driver 2g from operating. The base 3 includes an anvil 3d, punch pins 5, and a W-shaped spring wire 4 operatively connected to the pins 5 and pressed by the cover 2a during the first movement to drive the pins 5. The base also includes waste punch collecting compartments closed by a removable cover 3e, and staple storage compartments. The section 2 can be pivoted out relative to the base 3 to up to 225° angle.

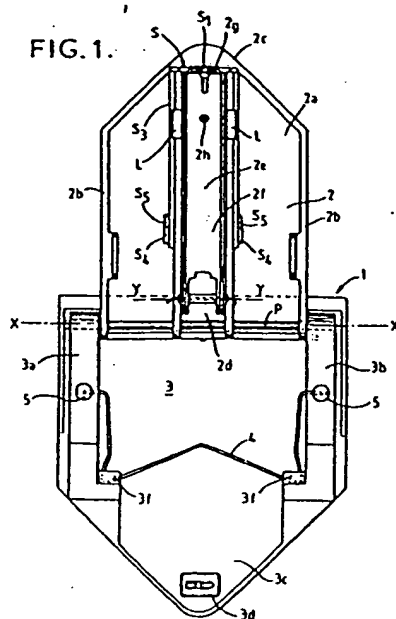
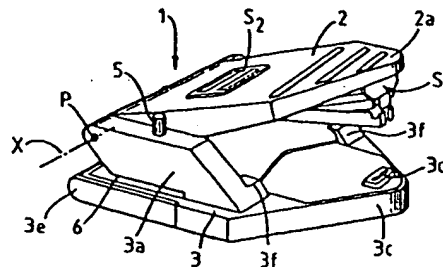


FIG. 3.



BEST AVAILABLE COPY

GB 2 186 227 1

FIG. 1.

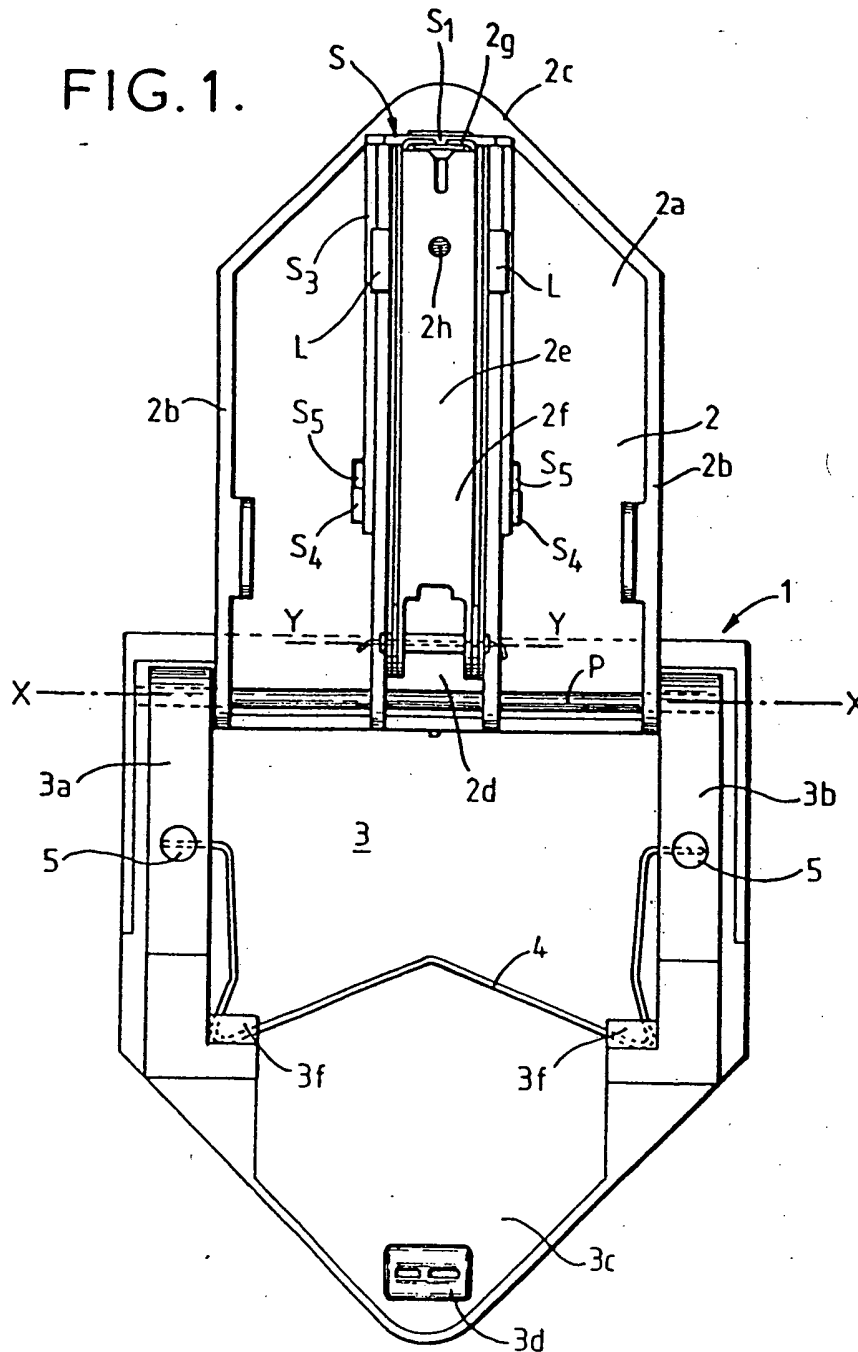
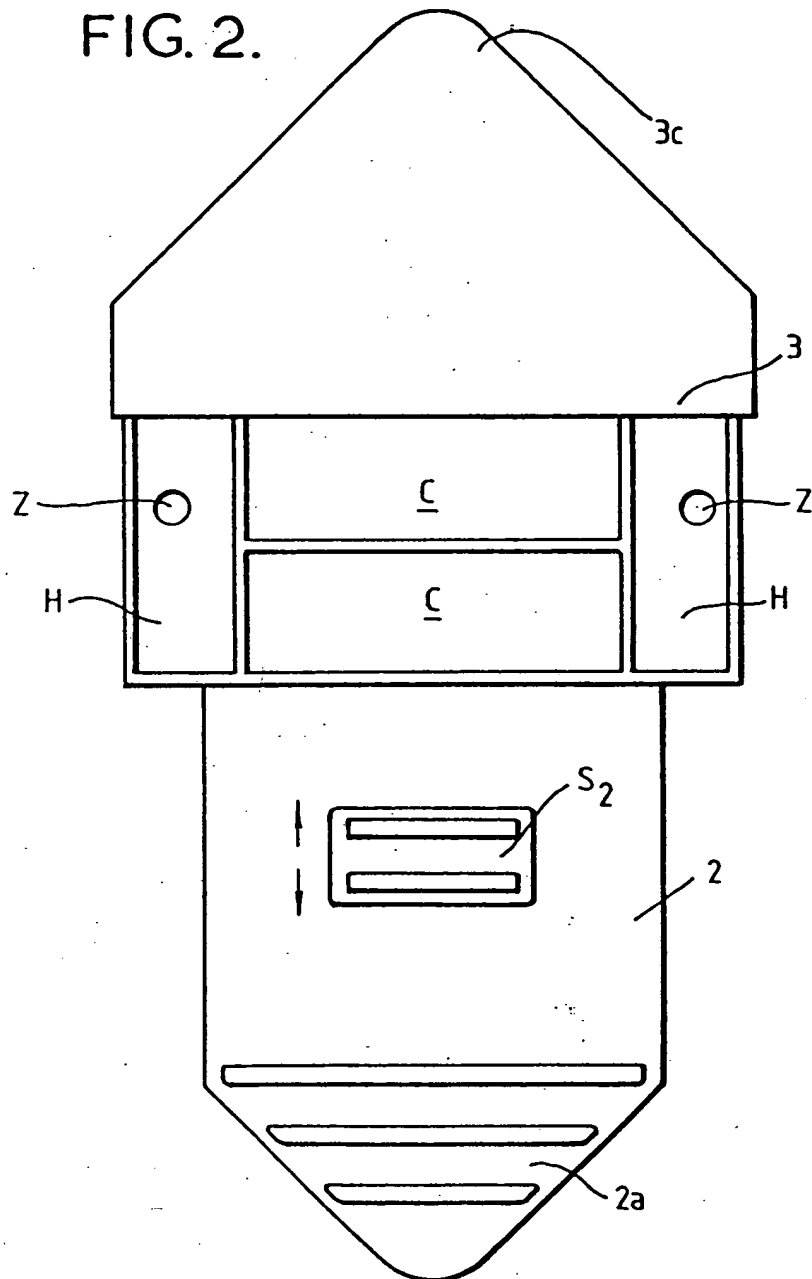


FIG. 2.



mounted on the housing to prevent the necessary movement between the actuating part and tray to dispense a staple. Preferably, the safety means comprises a slidable blocking member, actuated, preferably, by a slidable finger piece arranged on an upper surface of the housing, the slidable blocking member, preferably, being slidable in between an upper wall of the housing and the tray.

10 An embodiment of a stapler in accordance with the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

15 *Figure 1* shows a plan view of the stapler with a first section in a first, open position relative to a stapler base;

*Figure 2* shows an underside view of the stapler when the first section is in the open position as in *Fig. 1*;

20 *Figure 3* shows a perspective view of the stapler with the first section resting on a spring mechanism of the stapler;

*Figure 4* shows a diagrammatic sectional side view of the stapler with hidden detail, 25 and

*Figure 5* shows a detail of safety means.

Referring to the drawings a stapler 1 is designed as a combined stapler and hole punch employing a common action about pivot axis 30 X-X to dispense the staples and to punch a hole or holes in a sheet of paper (not shown).

The combined stapler and punch comprises a first section 2 in the form of a staple carrier. The staple carrier 2 comprises a moulded 35 plastics lid or cover 2a with depending side, rear and front walls 2b. The carrier 2 is of generally rectangular shape with a front V-shaped extension 2c. A central longitudinal channel or housing 2d is also moulded into 40 the underside of the lid (see *Fig. 1*). The channel 2d receives a standard staple dispensing unit 2e which is hinged about axis Y-Y on the rear of the channel 2d in a manner which should be evident. The staple dispensing unit 45 2e has a tray 2f for a block of staples, an actuating part or plate actuator 2g fixed relative to the cover, which actuator acts directly on an end staple of the block in known manner to dispense a staple, spring loading 50 mechanism 2h urging the staple block along the tray towards the end of the tray remote from axis Y-Y and a spring loaded plate of known form (not shown) that fits inside the tray over the staple block and determines the 55 dispensing stroke since it is constrained to limit pivotal movement by a projecting portion thereof being movable in a slot in the actuator. Any other known form of staple dispensing unit may be employed.

60 Most importantly the staple carrier 2 is provided with safety means S to prevent the necessary movement between the actuator 2g and tray 2f to dispense a staple in a manner which will be described later.

65 The first section 2 is pivotally mounted on a

base 3 in between generally upstanding side walls 3a,3b of the base, by means of a single pivot pin P which passes through side walls 3a,3b,2b and through the channel 2d. The 70 base 3 is generally rectangular but has a V-shaped extension 3c carrying a preformed plate 3d on which a staple may be formed in a manner generally known per se.

The base 3 is similar to the usual base of a 75 punch and has two hollow compartments H (see *Fig. 2*), for collecting waste punch material (i.e. paper circles), with a removable resilient force fit bottom cover 3e (see *Fig. 3*) giving access to the compartment for removal 80 of the waste. The compartments and removable bottom cover may be of any convenient form. Additionally, and advantageously, two further compartments C are provided which may act as storage compartments for 85 further staple blocks.

As shown in *Fig. 1*, the first section 2 is in a first position, opened out relative to the base 3 so that this section and base occupy generally parallel planes. In this instance, the 90 first section 2 can be moved through a further 45° relative to the base to a fully open position. In a second or closed position the staple dispensing unit 2e contacts the staple forming plate 3d and the side walls 2b of cover 2a of 95 the first section 2 contact stops 3e (upstanding) from the base inwardly of the side walls 3a,3b giving the first section 2 a pivotal angle of 180° about axis X-X from the position as shown in *Fig. 1* and of 225° altogether. 100

A spring mechanism in the form of a single generally W-shaped wire 4 is mounted on the base 3 in a manner as shown in the drawings, 105 in between side walls 3a,3b and against stops 3f. Spring wire 4 is in operative connection with cylindrical hole punch pins 5 mounted in side walls 3a,3b for vertical reciprocation (reciprocation at right angles to the base 3). The 110 ends of wire 4 are bent outwardly and pass into respective matching transverse holes in the pins 5. Each end of the wire is constrained for vertical movement in a slot in a respective one of the side walls 3a,3b on reciprocation of one of the pins 5.

115 *Fig. 3* shows a perspective view of the combined stapler and punch 1 with the side walls 2b of the cover 2a resting on the spring wire 4. A slot 6 is defined into which paper to be punched may be passed and on movement 120 of the first section 2 towards the closed position said side walls 2b act directly on the spring wire 4 to move the pins 5 downwardly relative to walls 3a,3b towards the hollow compartment in the base. Subsequently, the 125 pins 5 pass through the paper in the slot 7 and into respective hollow compartments H through matching holes Z in an upper wall of each compartment to thereby punch a hole in the paper and collect the waste material. On 130 further movement of the first section 2 to-

wards the closed position a staple would be dispensed and formed on the staple forming plate 3d in a manner which should be evident.

However, such a feature may at times be inconvenient and whilst using the combined stapler/punch in its punch mode staples might also perhaps be inadvertently dispensed despite the further angle of rotation required towards the closed position in order to dispense a staple.

Therefore, advantageously, in order to guard against this eventuality, and in general to provide an added safety measure (particularly useful as a child safety device) switchable safety means or guard S has been provided which may be engaged when the device 1 is not in use, or when the punch mode is adapted. The safety means S comprises a slidable blocking member S<sub>1</sub>, actuated by a slidable rectangular finger piece S<sub>2</sub> (having a grip surface) arranged on the upper surface of cover 2a. The blocking member S<sub>1</sub> is slidable rearwardly from an inoperative position (not shown) forward of the staple dispensing unit to a blocking position (as shown in Fig. 1) where it lies in between the underside of the cover 2a (at the end of channel 2d) and the free end of the tray. This renders the staple dispensing means inoperable since the actuator is prevented from being moved in the tray to dispense the end staple from the staple block.

The blocking member S<sub>1</sub> is itself an end wall of a generally U-shaped member S<sub>3</sub> which extends around the sides of channel 2d. The fingerpiece S<sub>2</sub> has two downwardly depending prongs S<sub>4</sub> attached to the free limbs of U-shaped member S<sub>3</sub>, said prongs being constrained for limited movement in slots S<sub>5</sub> in cover 2a. As the prongs S<sub>4</sub> are reciprocated in slots S<sub>5</sub> by fingerpiece S<sub>2</sub> the U-shaped member is reciprocated carrying the blocking member S<sub>1</sub> into and out of an operative blocking position. Guide lugs L in the channel 2d overlap the blocking member S<sub>1</sub>.

It is to be appreciated that this safety feature may be incorporated into staples of other designs and not necessarily staplers incorporating a punch function.

Individual features, function or combinations thereof may be individually patentably inventive and the scope of any term as used herein is to extend to the use of any other generally equivalent or generic term where sensible. For example, features of the punch base itself might be individually patentably inventive so that the general base 3 with upstanding walls and spring wire 4 might be patentably inventive when used in a standard form of punch, without a staple dispensing facility. Additionally, it may be advantageous that the punch pins can be operated independently without using the cover 2a, just by pushing down on the pin itself. A stapler provided with an built-in facility for carrying spare staples might also

be patentably inventive per se.

Still further according to the present invention there is provided a punch comprising a first, actuating section movable, preferably pivotable, relative to a base on which is mounted a wire spring (preferably W-shaped) having ends in operative connection with spaced punch pins, said ends preferably being constrained to move in slots in the side walls to reciprocate the pins on operation of said first, actuating section. Such an arrangement may advantageously provide a simple, reliable punch action and a punch that may be produced cost effectively.

#### CLAIMS

1. A combined stapler and punch employing a common action for punching and for dispensing staples.
2. A combined stapler and punch as claimed in Claim 1 comprising a base on which a staple may be formed.
3. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable relative to the base to form a staple on said base, said movement of the first section relative to the base providing the additional or secondary function of operating the punch.
4. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable relative to the base, said relative movement having the function of operating the punch, the staple carrier comprising an actuating part for dispensing staples from a staple block, in use, received in a tray of the staple carrier, on relative movement of the actuating part and tray.
5. A combined stapler and punch as claimed in Claim 3 or Claim 4 in which the first section is pivotally mounted on the base or mounted for a reciprocal movement.
6. A combined stapler and punch as claimed in any one of Claims 3 to 5 in which the base has two parallel generally upstanding side walls and the first section is pivotally mounted thereon or therebetween, the first section being pivotable from a first, open position to a second, closed position in which a staple may be dispensed and formed on the base.
7. A combined stapler and punch as claimed in Claim 6 in which in the open position the staple carrier and base occupy generally parallel planes.
8. A combined stapler and punch as claimed in Claim 5, Claim 6 or Claim 7 in which a wide pivoting angle (possibly 180° or even 225°) of the first section on the base is provided.
9. A combined stapler and punch as claimed in any one of Claims 5 to 8 in which the first section is arranged to actuate a spring mechanism, said spring mechanism be-

ing in operative connection with at least one hole punch pin, said at least one punch pin being mounted for reciprocal movement in an associated one of said side walls.

- 5 10. A combined stapler and punch as claimed in Claim 9 in which the spring mechanism is in the form of a single spring member suitably located in the base.
- 10 11. A combined stapler and punch as claimed in any one of claims 3 to 10 in which the base has a slot for receiving paper to be punched.
- 15 12. A combined stapler and punch as claimed in Claim 11 which is provided with one or more hollow compartments for collecting waste punch material.
- 20 13. A combined stapler and punch as claimed in Claim 12 in which said base is provided with a removable resilient, force or snap fit bottom cover giving access to said compartment or compartments for removal of said collected waste.
- 25 14. A combined stapler and punch as claimed in any one of Claims 3 to 13 in which the base has an extension on which is mounted a staple forming plate.
- 30 15. A combined stapler and punch as claimed in Claim 14 in which the extension is V-shaped.
- 35 16. A combined stapler and punch as claimed in Claim 14 or 15 in which said first section is provided with a similar shaped extension to said first mentioned extension.
- 40 17. A combined stapler and punch as claimed in any one of the preceding claims having one or more compartments for the reception of spare staples.
- 45 18. A combined stapler and punch as claimed in Claim 3 or Claim 4 or any claim dependent therefrom in which the first section comprises a moulded plastics top cover with means receiving a standard staple dispensing unit (comprising an actuating part movable relative to a staple tray).
- 50 19. A combined stapler and punch as claimed in any one of the preceding claims provided with safety means to substantially prevent inadvertent operation of the stapler when performing the punch function.
- 55 20. A combined stapler and punch as claimed in Claim 19 in which the safety means is engaged whilst the apparatus is not in use.
- 60 21. A combined stapler and punch as claimed in Claim 20 when dependent from Claim 3 or Claim 4 in which the safety means comprises a slidable blocking member.
- 65 22. A combined stapler and punch as claimed in Claim 21 in which the slidable blocking member is actuated by a slidable finger piece arranged on the upper surface of the first section.
23. A combined stapler and punch as claimed in Claim 22 in which the slidable blocking member is slidable in between an upper wall of the first section and the tray of

the staple dispensing means to render the staple dispensing means inoperable.

- 70 24. A stapler comprising a housing carrying a staple dispensing means, the staple dispensing means comprising an actuating part and a staple tray, said tray being movable relative to the actuating part to cause a staple to be dispensed, switchable safety means mounted on the housing to prevent the necessary movement between the actuating part and tray to dispense a staple.
- 75 25. A stapler as claimed in Claim 24 in which the tray is pivotable relative to the actuating part.

- 80 26. A stapler as claimed in Claim 24 or Claim 25 in which the safety means comprises a slidable blocking member.
- 85 27. A stapler as claimed in Claim 26 in which the slidable blocking member is actuated by a slidable finger piece arranged on an upper surface of the housing.

- 90 28. A stapler as claimed in Claim 27 in which the blocking member is slidable in between an upper wall of the housing and the tray.
- 95 29. A punch comprising a first, actuating section movable, preferably pivotable, relative to a base on which is mounted a wire spring (preferably W-shaped) having ends in operative connection with spaced punch pins, said ends preferably being constrained to move in slots in the side walls to reciprocate the pins on operation of said first, actuating section.

- 100 30. A combined stapler and punch substantially as herein described with reference to the figures of the accompanying drawings.

#### CLAIMS

- 105 Amendments to the claims have been filed, and have the following effect:-

New additional claims have been filed as follows:-

- 110 31. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable relative to the base to form a staple on said base, said movement of the first section relative to the base providing the additional or secondary function of operating the punch, said base having two parallel generally up-standing side walls and the first section being pivotally mounted thereon or therebetween, the first section being pivotable from a first, open position to a second, closed position in which a staple may be dispensed and formed on the base, and in which the first section is arranged to actuate a spring mechanism, said spring mechanism being in operative connection with at least one hole punch pin, said at least one punch pin being mounted for reciprocal movement in an associated one of said side walls.
- 120 32. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable
- 130

relative to the base, said relative movement having the function of operating the punch, the staple carrier comprising an actuating part for dispensing staples from a staple block, in use, received in a tray of the staple carrier, on relative movement of the actuating part and tray, said base having two parallel generally upstanding side walls and the first section being pivotally mounted thereon or therebetween, the first section being pivotable from a first, open position to a second, closed position in which a staple may be dispensed and formed on the base, and in which the first section is arranged to actuate a spring mechanism, said spring mechanism being in operative connection with at least one hole punch pin, said at least one punch pin being mounted for reciprocal movement in an associated one of said side walls.

33. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable relative to the base to form a staple on said base, said movement of the first section relative to the base providing the additional or secondary function of operating the punch, said base having two parallel generally upstanding side walls and the first section being pivotally mounted thereon or therebetween, the first section being pivotable from a first, open position to a second, closed position in which a staple may be dispensed and formed on the base, and the combined stapler and punch being provided with safety means to substantially prevent inadvertent operation of the stapler when performing the punch function.

34. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable relative to the base, said relative movement having the function of operating a punch, the staple carrier comprising an actuating part for dispensing staples from a staple block, in use, received in a tray of a staple carrier, on relative movement of the actuating part and tray, said base having two parallel generally upstanding side walls and the first section being pivotally mounted thereon or therebetween, the first section being pivotable from a first, open position to a second, closed position in which a staple may be dispensed or formed on the base, the said combined stapler and punch being provided with safety means to substantially prevent inadvertent operation of the stapler when performing the punch function.

35. A combined stapler and punch employing a common action for punching and for dispensing staples, and provided with safety means to substantially prevent inadvertent operation of the stapler when performing the punch function, the combined stapler and punch being adapted to operate two punch pins simultaneously to punch two holes.

36. A combined stapler and punch comprising a first section mounted on a base, said first section being a staple carrier movable relative to the base to form a stapler on said base, said movement of the first section relative to the base, providing the additional or secondary function of operating the punch, said combined stapler and punch being provided with safety means to substantially prevent inadvertent operation of the stapler when performing the punch function and being provided with means to punch two holes simultaneously in a sheet of paper and which are arranged in side by side relationship.

37. A combined stapler and punch comprising a first section mounted on the base said first section being a staple carrier movable relative to the base, said relative movement having the function of operating the punch, the staple carrier comprising an actuating part for dispensing staples from a staple block, in use, received in a tray of the staple carrier on relative movement of the actuating part and tray, the combined stapler and punch being provided with safety means to substantially prevent inadvertent operation of the stapler when performing the punch function and the arrangement being such that two holes arranged side by side can be punched simultaneously.

**THIS PAGE BLANK (USPTO)**



**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**

**THIS PAGE BLANK (USPTO)**